

Claims:

Please amend the claims as follows:

1-2. (Cancelled)

3. (Previously Presented) The composition of claim 45, wherein the polymer binder comprises a backbone, and said light attenuating compound is bonded to said backbone.

4. (Previously Presented) The composition of claim 45, wherein said light attenuating compound is bonded to a linkage unit and said linkage unit is bonded to the polymer binder.

5. (Original) The composition of claim 4, wherein said linkage unit comprises a moiety selected from the group consisting of cyclic alkyls, acyclic alkyls, acyclic heteroalkyls, and cyclic heteroalkyls.

6-15. (Cancelled)

16. (Previously Presented) The composition of claim 47, wherein said linkage unit comprises a moiety selected from the group consisting of cyclic alkyls, acyclic alkyls, acyclic heteroalkyls, and cyclic heteroalkyls.

17-23. (Canceled)

24. (Previously Presented) The composition of claim 39, wherein the EWG of said light attenuating compound is selected from the group consisting of carbonyl, cyano, carboxyl, carboxamido, sulfonyl, and non-aromatic heterocyclic groups.

25. (Previously Presented) The composition of claim 39, wherein each of R<sub>1</sub> and R<sub>2</sub> of said light attenuating compound is individually selected from the group consisting of hydrogen, alkyls, and heteroalkyls.

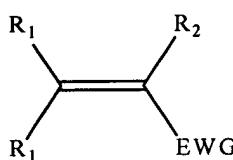
26. (Canceled)

27. (Previously Presented) The composition of claim 39, wherein said light attenuating compound comprises a moiety selected from the group consisting of COOH, OH, CONH<sub>2</sub>, CONHR', CH<sub>2</sub>X, and mixtures thereof, wherein R' is individually selected from the group consisting of hydrogen, alkyls, and heteroalkyls, and wherein X is a halogen.

28-35. (Canceled)

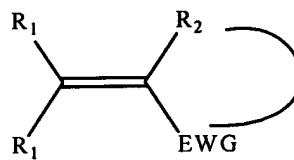
36. (Original) In a composition for use during microlithographic processes, said composition comprising a polymer binder dissolved in a solvent system, the improvement which comprises a non-aromatic, light attenuating compound comprising a moiety selected from the group consisting of:

(a)



Structure A

or

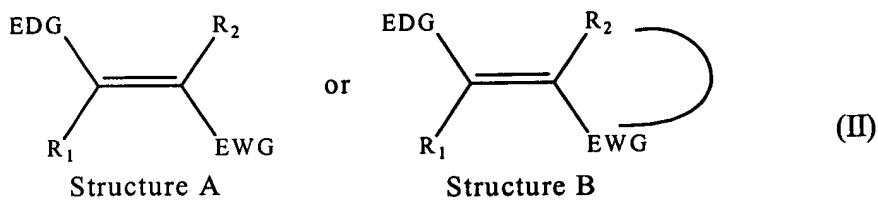


Structure B

(I)

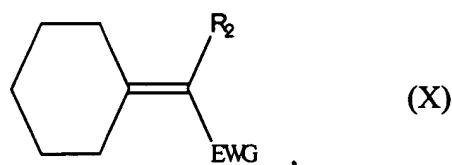
where:

- each R<sub>1</sub> is non-aromatic and is individually hydrogen, or an acyclic or cyclic alkyl or heteroalkyl;
- in structure A, where EWG and R<sub>2</sub> do not form a cyclic unit:
  - EWG is a non-aromatic electron-withdrawing group; and
  - R<sub>2</sub> is non-aromatic and is hydrogen, an acyclic or cyclic alkyl or heteroalkyl, or an electron-withdrawing group; and
- in structure B, where EWG and R<sub>2</sub> form a cyclic electron-withdrawing unit, the cyclic unit comprises a C=O, C=S, or a C=N at a first carbon atom, and:
  - a C=O or a C=N attached to a carbon atom at least two carbon atoms away from the first carbon atom; or an O, S, or N as a member of the ring at least two positions away from the first carbon atom;

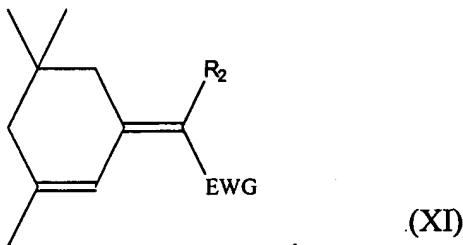


where:

- R<sub>1</sub> is non-aromatic and is individually hydrogen, or an acyclic or cyclic alkyl or heteroalkyl;
- EDG is an electron-donating group;
- in structure A, where EWG and R<sub>2</sub> do not form a cyclic unit:  
EWG is a non-aromatic electron-withdrawing group; and  
R<sub>2</sub> is non-aromatic and is hydrogen, an acyclic or cyclic alkyl or heteroalkyl, or an electron-withdrawing group; and
- in structure B, where EWG and R<sub>2</sub> form a cyclic electron-withdrawing unit,  
the cyclic unit comprises a C=O, C=S, or a C=N at a first carbon atom, and:  
a C=O or a C=N attached to a carbon atom at least two carbon atoms away  
from the first carbon atom; or an O, S, or N as a member of the ring at least  
two positions away from the first carbon atom;



where: R<sub>2</sub> is non-aromatic and is individually hydrogen, an acyclic or cyclic alkyl or heteroalkyl, or an electron-withdrawing group; and EWG is a non-aromatic electron-withdrawing group; and



where: R<sub>2</sub> is non-aromatic and is individually hydrogen, an acyclic or cyclic alkyl or heteroalkyl, or an electron-withdrawing group; and EWG is a non-aromatic electron-withdrawing group;

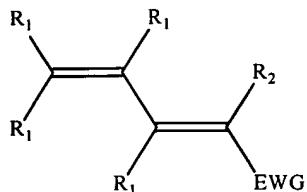
- (b) olefinic moieties of (I), (II), and mixtures thereof; and
- (c) mixtures of (a) and (b),

wherein said polymer binder comprises a backbone, and at least one of R<sub>1</sub> and R<sub>2</sub> of said light attenuating compound is bonded to the polymer binder backbone.

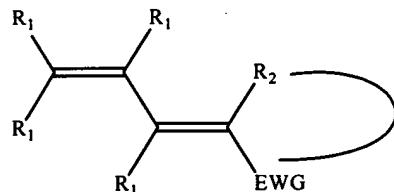
37-38. (Canceled)

39. (Currently Amended) In a composition for use during microlithographic processes, said composition comprising a polymer binder dissolved in a solvent system, the improvement which comprises a non-aromatic, light attenuating compound comprising a moiety selected from the group consisting of:

(a)



or



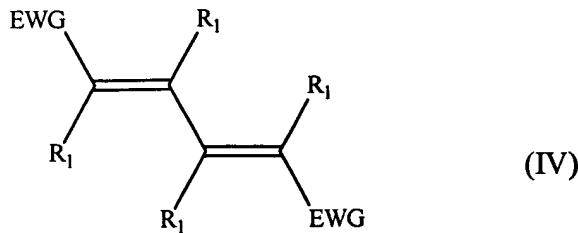
(III)

Structure A

Structure B

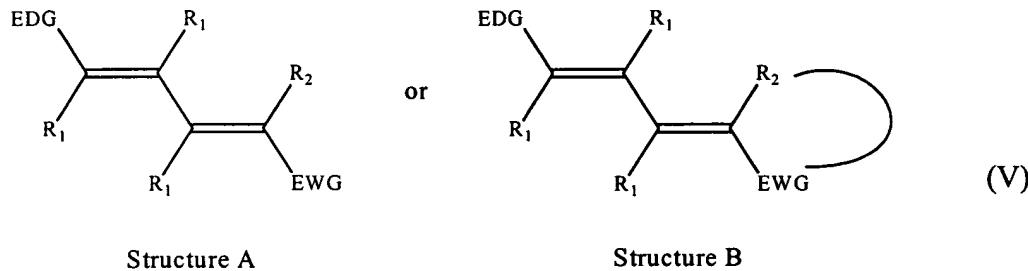
where:

- each R<sub>1</sub> is non-aromatic and is individually hydrogen, or an acyclic or cyclic alkyl or heteroalkyl;
- in structure A, where EWG and R<sub>2</sub> do not form a cyclic unit:  
EWG is a non-aromatic electron-withdrawing group; and  
R<sub>2</sub> is non-aromatic and is hydrogen, an acyclic or cyclic alkyl or heteroalkyl, or an electron-withdrawing group;
- in structure B, where EWG and R<sub>2</sub> form a cyclic electron-withdrawing unit, the cyclic unit comprises a C=O, C=S, or a C=N at a first carbon atom, and: a C=O or a C=N attached to a carbon atom at least two carbon atoms away from the first carbon atom; or an O, S, or N as a member of the ring at least two positions away from the first carbon atom;



where:

- each  $R_1$  is non-aromatic and is individually hydrogen, or an acyclic or cyclic alkyl or heteroalkyl; and
  - EWG is a non-aromatic electron-withdrawing group;



where:

- each  $R_1$  is non-aromatic and is individually hydrogen, or an acyclic or cyclic alkyl or heteroalkyl;
  - EDG is an electron-donating group;
  - in structure A, where EWG and  $R_2$  do not form a cyclic unit:

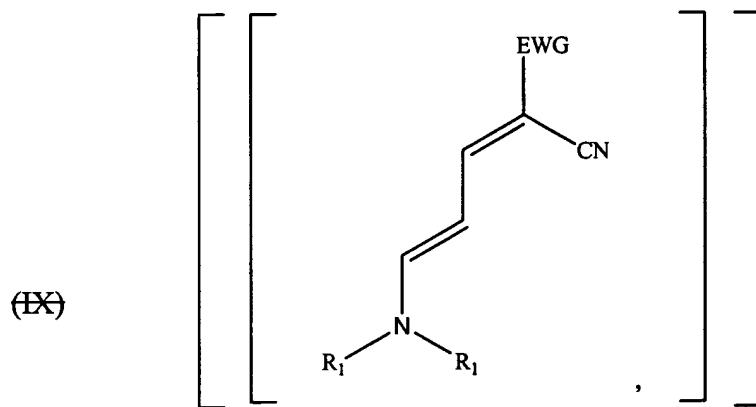
EWG is a non-aromatic electron-withdrawing group other than cyano groups, and R<sub>2</sub> is non-aromatic and is hydrogen, an acyclic or

cyclic alkyl or heteroalkyl, or an electron-withdrawing group;

or

EWG is a cyano group, and R<sub>2</sub> is non-aromatic and is hydrogen, or an acyclic or cyclic alkyl or heteroalkyl; and

- in structure B, where EWG and R<sub>2</sub> form a cyclic electron-withdrawing unit, the cyclic unit comprises a C=O, C=S, or a C=N at a first carbon atom, and: a C=O or a C=N attached to a carbon atom at least two carbon atoms away from the first carbon atom; or an O, S, or N as a member of the ring at least two positions away from the first carbon atom;



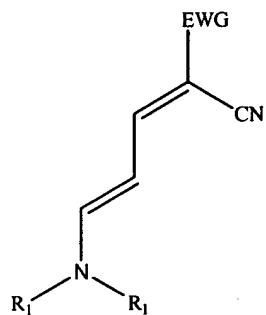
where EWG is a non-aromatic electron-withdrawing group;

- (b) diolefinic moieties of (III), (IV), (V), and mixtures thereof; and
- (c) mixtures of (a) and (b),

wherein said polymer binder comprises a backbone, and at least one of R<sub>1</sub> and R<sub>2</sub> of said light attenuating compound is bonded to the polymer binder backbone.

40. (Canceled)

41. (Currently Amended) In a composition for use during microlithographic processes, said composition comprising a polymer binder dissolved in a solvent system, the improvement which comprises a non-aromatic, light attenuating compound comprising a moiety of



where EWG is a non-aromatic electron-withdrawing group selected from the group consisting of cyanos, iminos, carboxylic acids, carboxylic esters, carboximido, and sulfonyls groups; and  
each R1 is individually selected from the group consisting of hydrogen and alkyls, wherein said polymer binder comprises a backbone, and EWG is bonded to said backbone.

42-44. (Canceled)

45. (Previously Presented) In a curable composition for use during microlithographic processes, said composition comprising a polymer binder dissolved in a solvent system, the improvement which comprises a non-aromatic, light attenuating compound which is bonded to the polymer binder and absorbs light at wavelengths of less than about 300 nm in said composition, said light attenuating compound comprising:

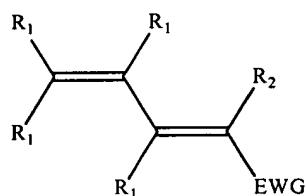
carbon atoms C<sub>1</sub> and C<sub>2</sub> double-bonded to one another and carbon atoms C<sub>3</sub> and C<sub>4</sub> double-bonded to one another and wherein C<sub>3</sub> is bonded to C<sub>2</sub> so as to form conjugated double bonds;

an EWG bonded to carbon atom C<sub>1</sub>; and

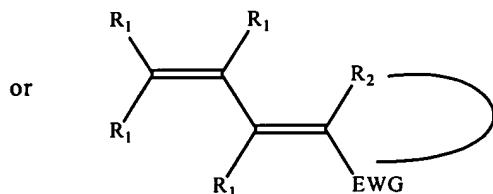
an EDG bonded to carbon atom C<sub>4</sub>, said EDG including a moiety selected from the group consisting of H<sub>3</sub>CO, OH, and R<sub>1</sub>-O-, wherein R<sub>1</sub> is non-aromatic and is selected from the group consisting of hydrogen, acyclic and cyclic alkyls, and heteroalkyls.

46. (Currently Amended) In a composition for use during microlithographic processes, said composition comprising a polymer binder dissolved in a solvent system, the improvement which comprises a non-aromatic, light attenuating compound comprising a moiety selected from the group consisting of:

(a)



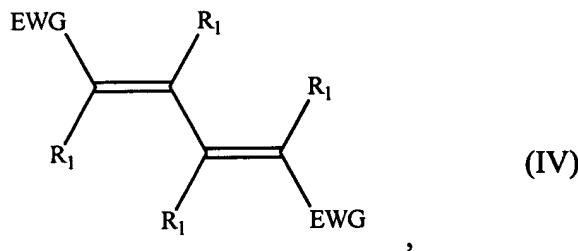
### Structure A



### **Structure B**

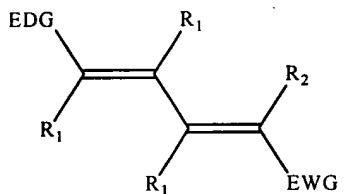
where:

- each  $R_1$  is non-aromatic and is individually selected from the group consisting of cyclic alkyls and acyclic alkyls;
  - in structure A, where EWG and  $R_2$  do not form a cyclic unit:
    - EWG is a non-aromatic electron-withdrawing group; and
    - $R_2$  is non-aromatic and is individually selected from the group consisting of cyclic alkyls and acyclic alkyls;
  - in structure B, where EWG and  $R_2$  form a cyclic electron-withdrawing unit, the cyclic unit comprises a C=O, C=S, or a C=N at a first carbon atom, and:
    - a C=O or a C=N attached to a carbon atom at least two carbon atoms away from the first carbon atom; or an O, S, or N as a member of the ring at least two positions away from the first carbon atom;

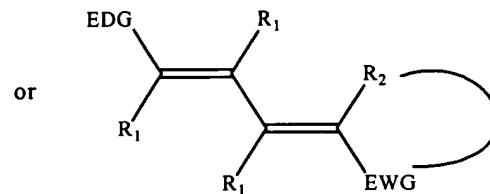


where:

- each  $R_1$  is non-aromatic and is individually selected from the group consisting of cyclic alkyls and acyclic alkyls; and
- EWG is a non-aromatic electron-withdrawing group;



Structure A



Structure B

(V)

where:

- each  $R_1$  is non-aromatic and is individually selected from the group consisting of cyclic alkyls and acyclic alkyls;
- EDG is an electron-donating group;

• in structure A, where EWG and  $R_2$  do not form a cyclic unit:

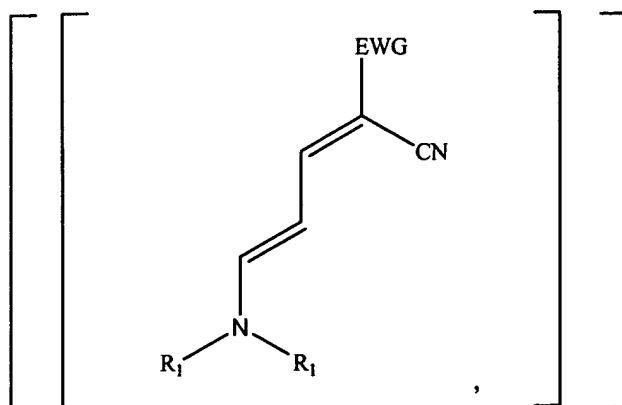
EWG is a non-aromatic electron-withdrawing group other than cyano groups, and  $R_2$  is non-aromatic and is individually selected from the group consisting of cyclic alkyls and acyclic alkyls;

or

EWG is a cyano group, and R<sub>2</sub> is non-aromatic and is individually selected from the group consisting of cyclic alkyls and acyclic alkyls; and

- in structure B, where EWG and R<sub>2</sub> form a cyclic electron-withdrawing unit, the cyclic unit comprises a C=O, C=S, or a C=N at a first carbon atom, and: a C=O or a C=N attached to a carbon atom at least two carbon atoms away from the first carbon atom; or an O, S, or N as a member of the ring at least two positions away from the first carbon atom;

(IX)

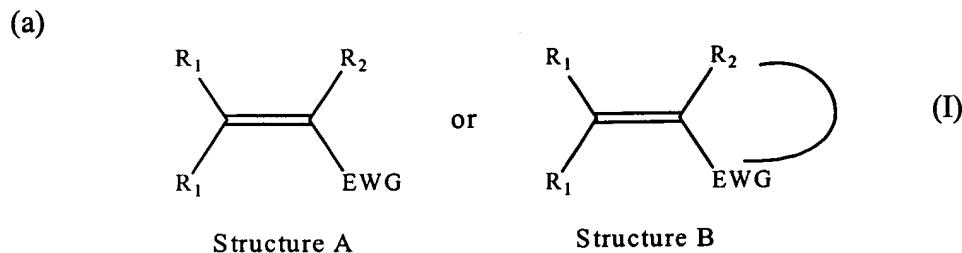


where EWG is a non-aromatic electron-withdrawing group;

- (b) diolefinic moieties of (III), (IV), (V), and mixtures thereof; and
- (c) mixtures of (a) and (b),

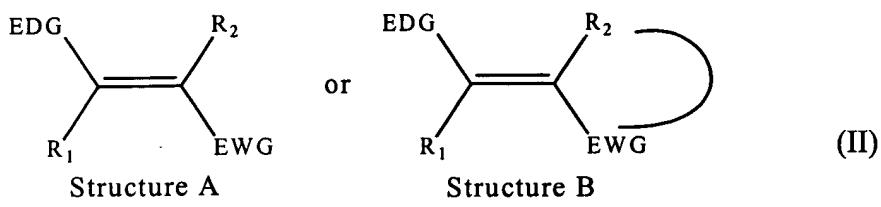
wherein at least one of R<sub>1</sub> and R<sub>2</sub> of said light attenuating compound is bonded to the polymer binder.

47. (Previously Presented) In a composition for use during microlithographic processes, said composition comprising a polymer binder dissolved in a solvent system, the improvement which comprises a non-aromatic, light attenuating compound comprising a moiety selected from the group consisting of:



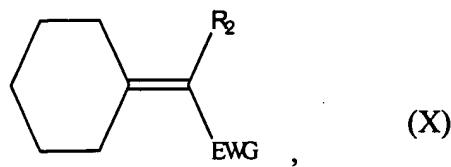
where:

- each  $R_1$  is non-aromatic and is individually hydrogen, or an acyclic or cyclic alkyl or heteroalkyl;
  - in structure A, where  $EWG$  and  $R_2$  do not form a cyclic unit:
    - $EWG$  is a non-aromatic electron-withdrawing group; and
    - $R_2$  is non-aromatic and is hydrogen, an acyclic or cyclic alkyl or heteroalkyl, or an electron-withdrawing group; and
  - in structure B, where  $EWG$  and  $R_2$  form a cyclic electron-withdrawing unit,
    - the cyclic unit comprises a  $C=O$ ,  $C=S$ , or a  $C=N$  at a first carbon atom, and:
      - a  $C=O$  or a  $C=N$  attached to a carbon atom at least two carbon atoms away from the first carbon atom; or an  $O$ ,  $S$ , or  $N$  as a member of the ring at least two positions away from the first carbon atom;

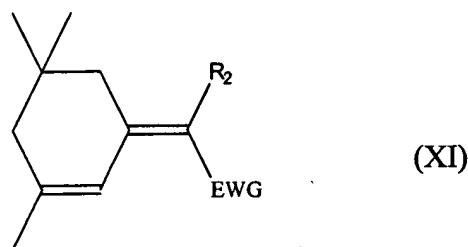


where:

- $R_1$  is non-aromatic and is individually hydrogen, or an acyclic or cyclic alkyl or heteroalkyl;
- EDG is an electron-donating group;
- in structure A, where EWG and  $R_2$  do not form a cyclic unit:  
EWG is a non-aromatic electron-withdrawing group; and  
 $R_2$  is non-aromatic and is hydrogen, an acyclic or cyclic alkyl or heteroalkyl, or an electron-withdrawing group; and
- in structure B, where EWG and  $R_2$  form a cyclic electron-withdrawing unit, the cyclic unit comprises a C=O, C=S, or a C=N at a first carbon atom, and:  
a C=O or a C=N attached to a carbon atom at least two carbon atoms away from the first carbon atom; or an O, S, or N as a member of the ring at least two positions away from the first carbon atom;



where: R<sub>2</sub> is non-aromatic and is individually hydrogen, an acyclic or cyclic alkyl or heteroalkyl, or an electron-withdrawing group; and EWG is a non-aromatic electron-withdrawing group; and



where: R<sub>2</sub> is non-aromatic and is individually hydrogen, an acyclic or cyclic alkyl or heteroalkyl, or an electron-withdrawing group; and EWG is a non-aromatic electron-withdrawing group;

- (b) olefinic moieties of (I), (II), and mixtures thereof; and
- (c) mixtures of (a) and (b),

wherein at least one of R<sub>1</sub> and R<sub>2</sub> of said light attenuating compound is bonded to a linkage unit and said linkage unit is bonded to the polymer binder.